Remarks

1. Summary of Office Action

In the office action mailed June 23, 2006, the Examiner objected to various claims on grounds of informalities, and the Examiner rejected claim 7 under 35 U.S.C. § 112 due to a typographical error in dependency. The Examiner then rejected all of the pending claims under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent No. 7,020,477 (Cramby).

2. Status of the Claims

In response to the Examiner's objections regarding informalities, Applicants have amended various claims to insert the word "given" before the term "mobile station", and Applicants have inserted the dependence recitation that was inadvertently left out of claim 8. In response to the Examiner's § 112 rejection of claim 7, Applicants have changed claim 7 to properly depend from claim 2, rather than from claim 1. Applicants have also made a minor change in claim 1, changing "time paging channel slot" to properly read "paging channel time slot".

Still pending in this application are claims 1-17, of which claims 1, 10, and 14 are independent and the remainder are dependent.

3. Response to § 112 Rejection

The Examiner rejected claim 7 as lacking antecedent basis for the terms "the first slot cycle index" and "the second slot cycle index". Claim 7 was intended to depend from claim 2 and has been corrected to recite that dependency, thus overcoming this rejection.

4. Response to § 102 Rejection

As noted above, the Examiner rejected all of the claims as being allegedly anticipated by Cramby. Applicants respectfully submit that this rejection is in error and should be withdrawn,

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because Cramby does not teach (expressly or inherently) all of the limitations of any of the pending claims.

a. Claims 1-13 and 15-17

Each of Applicants' claims 1-13 and 15-17 includes the element of selecting a failure interval based on a mobile station's slot cycle index. More specifically, each of these claims requires in one way or another paging a mobile station, then waiting a particular time interval for response from the mobile station before then re-paging the mobile station on a next paging channel time slot that the mobile station is set to monitor.

Independent claim 1, for instance, recites the inclusion of interval-selection logic that selects, based on a mobile station's slot cycle index, a time interval to wait for a response from the mobile station before then re-paging the mobile station on a next paging channel time slot that the mobile station is set to monitor, and dependent claims 2-9 incorporate this element by virtue of their dependence from claim 1.

Independent claim 10 recites a method that involves using a slot cycle index of a mobile station as a basis to select a failure-interval to use for re-paging the mobile station, and using the selected failure-interval as a basis to determine when to re-page the mobile station. And claims 11-13 incorporate this element by virtue of their dependence from claim 10.

Similarly, claim 15 recites selecting, based on a first mobile station's slot cycle index, a first interval to wait for a page response from a first mobile station before concluding that a page failure has occurred and then re-paging the first mobile station on a next paging channel slot that is commensurate with the first mobile station's slot cycle index. And claim 15 further recites selecting, based on a second mobile station's slot cycle index, a second interval to wait for a page response from a second mobile station before concluding that a page failure has occurred and

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then re-paging the second mobile station on a next paging channel slot that is commensurate with the second mobile station's slot cycle index. Further, claims 16-17 incorporate these elements by virtue of their dependence from claim 15.

Cramby teaches a process of determining a mobile station's slot cycle ("paging period"), which is merely the frequency at which the mobile station would monitor the paging channel for incoming page messages. However, Cramby does not teach a process of determining or selecting a failure interval to wait for a response from the mobile station before then re-paging the mobile station at the next paging channel time slot that the mobile station is set to monitor. Therefore, Cramby does not anticipate claims 1-13 and 15-17.

In rejecting the claims, it appears that the Examiner might not have appreciated the distinction between (i) a slot cycle and (ii) a failure-interval, i.e., the time interval to wait for a response after paging a mobile station before then re-paging the mobile station in the mobile station's next slot cycle.

A slot cycle or paging period occurs regularly, such as every 1.28 seconds (SCI 0) or every 5.12 seconds (SCI 2) for instance. This is illustrated by way of example in Figure 2 of Applicants' specification and is well known in the art.

A failure-interval, on the other hand, is a time interval that the radio access network should wait for a response after paging the mobile station, before the radio access network then proceeds to re-page the mobile station in a next time slot that the mobile station is set to monitor. For instance, if the mobile station's slot cycle is 1.28 seconds and the failure interval is 6 seconds, then, after the network pages the mobile station at time t=0, the network would wait 6 seconds for a response from the mobile station and, absent a page response by the mobile station by time t=6, the network would then re-page the mobile station in the next time slot that the

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mobile station is set to monitor according to its 1.28 second slot cycle, which would be at time t=6.4 (i.e., 5 x 1.28).

As is well understood in the art and as explained in Applicants' specification, a slot cycle index (SCI) is an identifier of a mobile station's slot cycle. More specifically, in typical implementation, the slot cycle index may be used to identify a mobile station's slot cycle (i.e., paging period) by multiplying 1.28 by 2 to the power of the slot cycle index. For instance, a slot cycle index of 0 may mean a slot cycle (i.e., paging period) of $1.28 \times 2^0 = 1.28$ seconds. Whereas, a slot cycle index of 2 may mean a slot cycle (i.e., paging period) of $1.28 \times 2^2 = 1.28 \times 4 = 5.12$ seconds. Thus, reference to a mobile station's "slot cycle index" is well known in the art to be another way to refer to the mobile station's slot cycle (i.e., paging period).

As noted above, Cramby merely teaches a process of determining what slot cycle (i.e., paging period) to use for a mobile station. In particular, Cramby's goal is simply to allow a mobile station and network to calculate a substantially agreed paging period, i.e., frequency at which the mobile station will monitor the paging channel for incoming page messages. (*See, e.g.*, Cramby at column 1, lines 53-56 (defining "paging period" to be the time instances at which paging messages may be expected for the mobile station); column 3, lines 14-42 (explaining the desire to match core network calculation of paging period with mobile station calculation of paging period).

As such, Cramby teaches that the radio access network and mobile station in GPRS systems normally determine the mobile station's paging period based on a "SPLIT_PG_CYCLE" parameter, but that the core network (circuit-switched or packet-switched) in UTRAN systems determines the mobile station's paging period based on a DRX cycle length coefficient. Cramby introduces a mapping algorithm for computing a SPLIT_PG_CYCLE value to use based on the

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core network specific DRX cycle length coefficient, such that the resulting paging period determined using either value will be about the same. In particular, the algorithm that Cramby teaches is:

$$\text{SPLIT\_PG\_CYCLE} = 3 \times 2^{(9\text{-}CN\ specific\ cycle\ length\ coefficient)}.$$

(*See* Cramby, at column 3, lines 14-42). With the benefit of Cramby's algorithm, it becomes possible to harmonize the paging period used in a hybrid communication system, such as a system in which the radio access network operates according to GSM but the core network operates according to UMTS. (*See* Cramby, at column 2, lines 29-44).

Yet Cramby's teaching of determining and harmonizing a mobile station's slot cycle (i.e., paging period) does not amount to determining a failure interval, i.e., the time interval to wait for a response after paging a mobile station before then re-paging the mobile station on a next time slot that the mobile station is set to monitor. Indeed, there is no discussion in Cramby of determining or applying a failure interval. Thus, Cramby fails to teach at least this element of Applicants' claims.

In this regard, the Examiner might respond by arguing that Cramby's determination of a slot cycle constitutes determination of a failure interval. Yet that is not the case.

A slot cycle indicates merely how often the mobile station should monitor the paging channel for page messages. A failure interval, in stark contrast, indicates how long the network should wait for a response from the mobile station before the network then re-pages the mobile station on a next paging channel slot that the mobile station is set to monitor. In the prior art of record, mere determination of a slot cycle (i.e., paging period) does not amount to determination of failure interval, as those two concepts are disparate. Most importantly, Cramby does not teach use of a mobile station's slot cycle (i.e., paging period) as a failure interval. (In fact, doing so

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would mean that the mobile station would be paged at slot 1, the network would then detect absence of a mobile station response upon reaching slot 2, and the network would then re-page the mobile station at slot 3. Yet Cramby does not teach such an arrangement.)

Furthermore, since Cramby does not teach selecting or determining a failure interval at all, Cramby also does not teach selecting a failure interval based on the paging slot cycle index of the mobile station as in Applicants' claims 1-13 and 15-17. At best, Cramby teaches calculating the value SPLIT_PG_CYCLE (used by the radio access network and mobile station to determine the paging period) based on the core network specific DRX cycle length coefficient. Yet this does not amount to determining a failure interval based on the mobile station's slot cycle index.

Because Cramby fails to teach each and every element of Applicants' claims 1-13 and 15-17, Cramby does not anticipate those claims. Therefore, Applicants submit that claims 1-13 and 15-17 are allowable.

b. Claim 14

Claim 14 recites, among other elements, using a different failure interval for one mobile station than for another mobile station. More specifically, claim 14 recites waiting a first interval after paging a first mobile station, then determining upon expiration of that first interval that a page failure has occurred, and then responsively re-paging the first mobile station on a next paging channel slot commensurate with the first mobile station's slot cycle index. And claim 14 then recites waiting a second interval after paging a second mobile station, then determining upon expiration of that second interval that a page failure has occurred, and then responsively re-paging the second mobile station on a next paging channel slot commensurate with the second mobile station's slot cycle index. Claim 14 then further recites that the first slot cycle index

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differs from the second slot cycle index, and that the first interval differs from the second interval.

As discussed above, Cramby does not teach determining or applying a failure interval, i.e., a time interval to wait for a response after paging a mobile station before then re-paging the mobile station on a next time slot that the mobile station is set to monitor. Consequently, Cramby necessarily fails to teach applying *different* failure intervals for different mobile stations as recited in claim 14.

Because Cramby fails to teach each and every element of claim 14, Cramby does not anticipate claim 14. Therefore, Applicants submit that claim14 is allowable.

5. Conclusion

In view of the foregoing, Applicants submit that all of the pending claims 1-17 are in condition for allowance. Therefore, Applicants respectfully request favorable reconsideration and allowance of the claims.

Should the Examiner wish to discuss any aspect of this case with the undersigned, the Examiner is invited to call the undersigned at (312) 913-2141.

Respectfully submitted,

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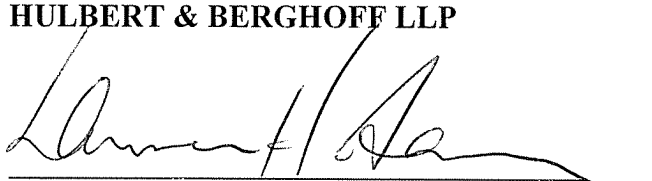
Dated: September 18, 2006

By: 

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